Reducing Diesel Emissions

Policy Case Studies from New York and New Jersey and the Diesel Emission Reduction Act

Connecticut Dept. of Environmental Protection
Diesel Policy, Technology and Fuels Forum
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Why Diesel?

- Diesels emit high levels of fine particulates at ground level
- Fine particles linked to respiratory illness, cancer & heart attacks
- Diesels responsible for estimated 60-70% of total toxic risk from air pollution
- Diesel black carbon linked to global warming

Why Connecticut?

- Each year in Connecticut, diesel PM is responsible for: > 200 premature deaths, 340 non-fatal heart attacks, 4000 asthma attacks, 24,000 work loss days and 140,000 minor restricted activity days
- > Health costs (non-fatal) amount to about $115 million per year
- Fairfield, Hartford and New Haven counties rank within hardest-hit 7 percent of U.S. counties for health impacts from diesel exhaust.
- The life-time diesel soot cancer risk for a resident of Fairfield Co. is 494 times EPA's acceptable risk level

Why Now?

- EPA's clean engine emission standards only apply to new engines (2007 model year & beyond) creating the "in-use" engine loophole

- New fuels and technologies make diesel solutions achievable and affordable for "in-use" engines

CT Special Act No. 05-7

- General Requirements
  - DEP recommends policy, programs and legislation for meeting PM reduction goals in CT Climate Plan (75% in 10 years)
  - DEP produces a list of identified sources of diesel exhaust and recommendations for maximizing emission reductions from identified sources

CT Special Act No. 05-7

- Priority Fleet Requirements
  - Maximize emission reductions from school buses, including in-cabin exposures, by 2010
  - Maximize reductions from transit buses by installing DPFs (or other 85% reduction method) 2010
  - Beginning 2006, phase in strategy for maximizing emission reductions from construction equipment serving state projects

Policy Case Studies

- California, Texas
- New York City
- New Jersey
- International – Switzerland, Japan

Also:

- Diesel in the Federal Energy Bill

New York City Local Laws

- Require Ultra-low Sulfur Diesel (ULSD) and Best Available Technology (BAT) for:
  - construction equipment
  - school buses
  - all municipally-owned diesels
  - waste haulers
  - sight-seeing buses

Construction Equipment

- Local Law No. 77: Passed Dec. 2003
- Requires ULSD and BAT for:
  - Diesel-powered nonroad vehicles, 50 hp and up, owned, operated by or on behalf of, or leased by a City agency.
- Justification: Use of purchasing power to protect health and reduce health costs

Case Study: New York City

Construction Timeline

- June 19, 2004: Lower Manhattan projects require ULSD + BAT
- Dec. 19, 2004: Citywide contracts require ULSD
- June 19, 2005: Citywide contracts >$2 mill require BAT
- Dec. 19, 2005: Citywide contracts <$2 mill require BAT

Construction BAT Designations

- NYC DEP publishes BAT designations
- Updates list at least every 6 months
- EPA/CARB verified for nonroad or onroad
- Primary requirement is PM reductions, NOx secondary
- BATs good for three years

Case Study: New York City

Three Categories of BAT

- Category I: Diesel Particulate Filter (DPF)
- Category II: Diesel Oxidation Catalyst (DOC) or Catalyzed Wire Mesh Filter (CWMF). The BAT is the technology that produces the greater PM reduction
- Category III: Emulsified Diesel Fuel (as long as it is compatible with ULSD)
- Other: For new vehicles, BAT may be OEM-installed technology, provided this provides greatest reduction in PM

Case Study: New York City

Construction BAT Selection

- Contractors/Agencies must ID qualifying BATs in Category I, eliminate those that are not technologically feasible (documentation required)
- If no Category I BAT is feasible, same process required for Category II BATs, etc…

Case Study: New York City

School Buses, Sight-seeing Buses, Waste Haulers & City-owned Diesels

- Requires ULSD and BAT for pre-2007 engines
- BAT Categories:
  - Level 4: 85% or greater PM reduction or 0.01 grams PM / Bhp-hr
  - Level 3: 50% - 84% PM reduction
  - Level 2: 25% - 49% PM reduction
  - Level 1: 20% - 24% PM reduction
- Approximately equivalent to CARB verification levels (no 20% - 24% level in CARB scheme)

Case Study: New York City

Timelines

- School Buses: 50% by Sept. 1, 2006 and 100% by Sept. 1, 2007
- Waste Haulers: 100% March 1, 2006
- Sight-seeing buses: 100% by Jan 1, 2007
- City-owned diesels: Phased in, 50% by Jan 1, 2010 and 100% by July 1, 2012

Case Study: New York City

State of New Jersey

- Legislation passed June 2005, needs voters approval in the fall
- Targets school buses, transit buses, garbage trucks, and publicly-owned vehicles
- About 30,000 vehicles targeted in 10 years, will eliminate about 400 tons (annually) of diesel PM

Requirements

- BART (R=Retrofit) technology required for garbage trucks, transit buses, publicly-owned vehicles
- Closed crankcase technology required on 100% of school buses in two years
- DEP studies benefits of tailpipe retrofits on school buses and promulgates rule

Case Study: New Jersey

Diesel Risk Mitigation Fund

- 17% of environmental funds from Corporate Business Tax (environmental funds are 4% of total CBT revenue)
- Plus direct appropriation from underground storage tank fund ($80 million surplus)
- Retrofit costs reimbursed when proof of compliance submitted to state

Case Study: New Jersey

International Policy

- Switzerland – Requires diesel particulate filters on all construction equipment. More than 6,000 retrofits installed so far
- Sweden, German, UK following this lead
- Tokyo – All diesels 7 years or older in Tokyo metro-area must be retrofitted, rebuilt, replaced, or use alt-fuel.

Federal Energy Bill 2005

- Sec. 741 - Clean School Bus Program
  - Authorizes $55 million for ‘06 and ’07 retrofits and replacements through EPA
- Sec. 742 - Truck Retrofit and Modernization Program
  - Authorizes $100 million over next 3 years to put ULSD and retrofits on trucks at ports or major hauling operations. Requires 50% match.
- Sec. 756 - Reduction of Engine Idling
  - Authorizes $140 million over next 3 years for truck and locomotive anti-idling measures. Requires 50% match.
- Subtitle G (Sections 791—797)—Diesel Emissions Reduction Act of 2005 – aka “DERA”

DERA - Federal Retrofit Subsidies

- Authorizes $1 billion over 5 years ($200 million annually)
  - 70% distributed by EPA
  - 20% to states to develop retrofit programs (split equally among approved states)
  - Additional 10% incentive for states to match the federal dollars
- Connecticut Opportunity
  - CT 1/50th of “20% Fund” = $800,000 (minimum)
  - Potential 1 for 2 match (up to 50% of original allotment) from the “10% Fund” = $400,000
  - Target amount from State to maximize federal match = $800,000
  - Total that would then be in CT Diesel Risk Reduction Fund = $2 million/yr

Federal Energy Bill 2005

DERA continued

- Eligible for “70% Fund”
  - Public or non-profit entities
  - Fleets that are subject to “elective” requirements (e.g., bid specs)
  - But not fleets subject to Federal, state or local mandates
  - Focus on funding retrofits in public fleets
- Priority criteria
  - Maximize public health benefits
  - Most cost-effective
  - Serve areas with greatest PM exposure problems and highest diesel engine contribution
  - Include a certified engine configuration, verified technology, or emerging technology that has a long expected useful life
  - Will maximize the useful life of any retrofit technology used by the eligible entity
  - Use ULSD
- Also funds new technologies, non-financial incentives, outreach

Federal Energy Bill 2005

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